

IN THE CLAIMS

Please amend the claims as shown below.

1. (currently amended) A component adapted for operation at an elevated temperature, the component comprising:

- a substrate material;
- a thermal barrier coating disposed on the substrate material, the thermal barrier coating further comprising:
 - a layer of ceramic material;
 - a plurality of inclusions ~~having a coefficient of thermal expansion greater than that of the ceramic material~~ disposed below a free surface of the ceramic material; and
 - a crack extending from respective ones of the plurality of the inclusions to the free surface of the ceramic material.

2 - 3. (cancelled)

4. (currently amended) The component of claim 1, further comprising:

- the substrate material comprises a superalloy material;
- the ceramic material comprises one of the group of alumina, zirconia, yttria-stabilized zirconia, and magnesia-stabilized zirconia; and
- wherein the inclusions ~~comprises~~ comprise a material having a coefficient of thermal expansion greater than that of the ceramic material and comprise one of the group of a polymer, ceramic, glass and metal material.

5. (original) The component of claim 1, wherein the inclusions comprise hollow spheres of material having a coefficient of thermal expansion greater than that of the ceramic material.

6. (original) The component of claim 1, wherein the inclusions comprise a solid material having a coefficient of thermal expansion greater than that of the ceramic material.

7. (currently amended) A thermal barrier coating comprising:
a layer of a ceramic material having a free surface;
a plurality of inclusions ~~having a coefficient of thermal expansion greater than that of the ceramic material~~ disposed below the free surface of the layer of ceramic material; and
a plurality of cracks extending from respective ones of the plurality of inclusions to the free surface.

8 - 9. (cancelled)

10. (original) The thermal barrier coating of claim 7, further comprising:
the ceramic material comprising one of the group of alumina, zirconia, yttria-stabilized zirconia, and magnesia-stabilized zirconia; and
the inclusions comprising a material having a coefficient of thermal expansion greater than that of the ceramic material.

11. (original) The thermal barrier coating of claim 7, wherein the inclusions comprise a solid material having a coefficient of thermal expansion greater than that of the ceramic material.

12. (original) The thermal barrier coating of claim 7, wherein the inclusions comprise a hollow material having a coefficient of thermal expansion greater than that of the ceramic material.

13 - 20. (cancelled).

21. (currently amended) A thermal barrier coating comprising:
a layer of a ceramic material having a free surface;
a plurality of stress relieving cracks extending from the free surface into the ceramic material, the cracks extending into respective voids ~~formed from inclusions having a coefficient of thermal expansion greater than that of the ceramic material and~~ disposed within the ceramic material below the free surface so that the cracks have no crack tip, the voids acting as respective crack arrestors within the ceramic material.

22. (currently amended) A thermal barrier coating comprising a top free surface divided into segments defined by a plurality of cracks extending from the top free surface into the thermal barrier coating to respective crack-arresting inclusions ~~having a coefficient of thermal expansion greater than that of the ceramic material and~~ disposed below the top free surface.

23. (previously presented) The thermal barrier coating of claim 22, wherein the inclusions comprise voids.

24. (previously presented) The component of claim 1, wherein the inclusions have a decomposition, melting or evaporation temperature that is at or below a maximum ceramic material processing temperature.

25. (previously presented) The component of claim 1, wherein the inclusions are decomposed, melted or evaporated when the ceramic material is processed to form voids in the thermal barrier coating.

26. (currently amended) The component of claim 1, wherein ~~the a~~ maximum ceramic material processing temperature is equal to a sintering step temperature that cures and densifies the ceramic material.

27. (currently amended) The component of claim 1, wherein ~~the~~ a sintering step temperature is 1,000 °C. above ~~the~~ a stress free temperature of the ceramic material.

28. (previously presented) The component of claim 1, wherein the coefficient of thermal expansion of the ceramic material is $10e^{-6}K^{-1}$.

29. (currently amended) The component of claim 1, wherein the coefficient of thermal expansion of the inclusion is twice the coefficient of thermal expansion of the ceramic material.

30. (currently amended) The component of claim 1, wherein the ~~inclusion comprises~~ inclusions comprise a polymer, ceramic or metal.

31. (previously presented) The thermal barrier coating of claim 7, wherein the inclusions have a decomposition, melting or evaporation temperature that is at or below a maximum ceramic material processing temperature.

32. (previously presented) The thermal barrier coating of claim 7, wherein the inclusions are decomposed, melted or evaporated when the ceramic material is processed to form voids in the thermal barrier coating.

33. (new) The component of claim 1, wherein the inclusions comprise a material having a coefficient of thermal expansion greater than that of the ceramic material.

34. (new) The thermal barrier coating of claim 7, wherein the inclusions comprise a material having a coefficient of thermal expansion greater than that of the ceramic material.

35. (new) The thermal barrier coating of claim 7, wherein the inclusions comprise voids.

36. (new) A thermal barrier coating comprising:
a layer of ceramic material having a free surface;
a plurality of inclusions disposed within the ceramic material below the free surface; and
a plurality of stress relieving cracks each extending upward from a respective one of the inclusions to the free surface but not extending downward from the respective one of the inclusions into the layer of ceramic material so that the plurality of stress relieving cracks each have no crack tip within the layer ceramic material.

37. (new) The thermal barrier coating of claim 36, wherein the inclusions comprise voids.

38. (new) The thermal barrier coating of claim 36, wherein the inclusions comprise a material exhibiting a coefficient of thermal expansion that is greater than a coefficient of thermal expansion of the ceramic material.